



Artis zee

Floor-mounted system for surgical angiography
VC 14

Data sheet

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SIEMENS

Artis zee

Floor-mounted system for surgical angiography

The Artis **zee** floor-mounted system is specifically designed to meet the escalating demands of high-end imaging for minimally invasive surgical angiography.

Artis **zee** can be equipped either with a 20 x 20 dynamic flat detector, or if more coverage is required, with the large 30 x 40 flat detector.

Built on three pillars:

Imaging excellence

Enhanced workflow

Investment confidence

The Artis **zee** floor-mounted system enables clinicians to care with greater ease, precision and flexibility.

Flexible full-body coverage

The rotating flat detector and collimator of Artis **zee** allow an optimum level of patient access and provides superb anatomical coverage.

Controlled at both the tableside and the detector housing itself, the rotation allows operation in landscape or portrait mode as well as any angle in between while maintaining a heads-up display on the monitor.

zee more, do more with the Artis zee Large Display*

Featuring a full-color 56-inch medical-grade screen that lets you view multiple inputs simultaneously, the Artis **zee** Large Display gives you the “whole picture” controlled directly at tableside.

Extend your viewing comfort

The new extended DCS* (Display Ceiling Suspension) with double pivot cantilevers allows for additional monitor positioning around the patient.

Available in combination with any of the monitor configurations offered with the Artis **zee** systems.



zee the benefits of advanced imaging in the OR

The Artis **zee** ceiling-mounted system is designed to conform to the requirements of surgical angiography, and provide efficient space and equipment management in sterile conditions while delivering excellent image quality.

zee excellent image quality

The Artis **zee** imaging chain provides enhanced image quality and features key advances that significantly improve the clarity of both live fluoro and roadmap, resulting in enhanced visualization of stents, their meshes, coils and guidewires.



* Option



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Maximizing coverage and positioning flexibility with Multispace.F*

Multispace.F for the Artis **zee** floor-mounted system allows for additional examination positions.

The stand rotation enables free positioning of the C-arm and table relative to one another, providing the flexibility and comfort in positioning whether the table is rotated to the right, to the left, or extended in the patient transfer position.

zee enhanced workflow with new ergonomic controls

Be it pre-examination, post-processing or quantification, the tableside control for the Artis **zee** provides the user with complete control.

- Modular system controls for freedom within the examination room
- Ergonomically redesigned graphical user interface
- Mouse-like joystick control for increased comfort

* Option



Left side table rotation



Right side table rotation



Extended park position



Artis zee

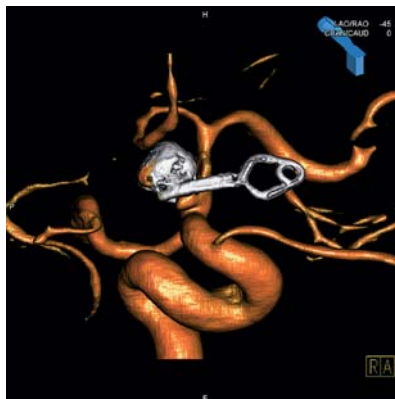
Floor-mounted system for surgical angiography

3D imaging and intuitive guidance¹

The Artis **zee** imaging chain enables a range of advanced 3D applications – from cross-sectional imaging of soft tissue at tableside to advanced guidance tools – that allow interventional clinicians to care with greater speed and precision.

The 3D data sets are acquired quickly and easily with the help of on-screen workflow guidance.

- **syngo InSpace 3D***
Real-time high-contrast imaging
- **syngo InSpace EP***
Convenient segmentation of cardiac structures, especially the left atrium, based on pre-procedural CT/MR data or DynaCT Cardiac images. Rotation of segmented 3D visualization or endoscopic view for detailed understanding of the anatomy and confident planning of ablation procedure.
- **syngo DynaCT***
Soft tissue imaging results available directly at the tableside in less than one minute, increasing confidence and virtually avoiding patient transfer to CT. A dedicated abdominal acquisition (minimum 200 degree rotation acquisition) at the patient head position enables high soft-tissue image quality of the abdomen.
- **syngo DynaCT Cardiac***
CT-like imaging of the heart by rotational angiography. Provides accurate information of the cardiac anatomy at the point of acquisition in the cath lab to support planning of complex procedures like ablation therapy. Reduces the need to rely on pre-procedural CT scans, which can represent obsolete information of dynamic cardiac structures. *syngo DynaCT Cardiac* can be equipped with both detector versions, however only the large detector allows the acquisition of larger volumes like the complete heart.



- **syngo iIdentify***
Simultaneous visualization of dual-volume high-contrast imaging or one high- and one low-contrast data set. Clearly differentiate between contrast-filled vessels, bones and stents or see the anatomical structure of tumors in combination with the feeding vessels.
- **syngo iGuide***
Integrated needle guidance in one smooth on-screen workflow, increasing confidence in and accuracy of needle procedures.
- **syngo iPilot***
Visualization and fading between live 2D fluoro and 3D images for improved orientation and effective device guidance. *syngo iPilot* updates dynamically during movements of the C-arm, table, zoom and source-to-image distance changes and allows compensation of patient movements at the touch of a button. To provide the most efficient workflow for your interventional procedure.
- **syngo iFlow***
Dynamic flow evaluation of a complete Digital Subtraction Angiography (DSA) run in a full-color single image, all at the press of a button. Results in a greater understanding of the contrast flow within pathology, assists in image review and clearly demonstrates post-procedural results.

Not all features shown are necessarily standard and available in all countries.

* Option

¹ A *syngo X Workplace* is required to produce 3D results. For details regarding the *X Workplace*, please refer to the specific data sheet.

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Floor-mounted system for surgical angiography

Stand

The Artis **zee** floor angio system is specifically designed to meet the escalating demands of high-end imaging for minimally invasive surgical angiography.

C-arm system

Highly flexible and quick positioning

Single joystick for patient-angle oriented C-arm and detector movements

Integrated, ICP computerized collision monitoring (ICP = Intelligent Collision Protection)

Programmable positioning	up to 5 system positions, additional 50 user-definable user positions and 3 direct positions
Isocenter-to-floor distance	106 cm (41.73")
Focus-to-isocenter distance	75 cm (29.53")
Patient coverage	185 cm (72.84")
Stand rotation	motorized programmable positioning from 0° to 35°
Double oblique projections	± 130° LAO/RAO and + 55°/- 45° CRAN/CAUD at 0° head-end C-arm position; ± 45° LAO/RAO and + 15°/- 45° CRAN/CAUD at 35° left-side C-arm position
Angulation speed	variable up to 25°/s with LAO/RAO and 18°/s with CRAN/CAUD
Variable focus-detector distance	approx. 90 cm – 120 cm (35.4" - 47.24"), speed up to 9 cm/s (3.54")
Longitudinal C-arm movement	motorized up to 15 cm/s (5.09"/s)

Multispace.F* – Maximum positioning flexibility

Additional stand rotation for free positioning of system and table relative to one another, for the following positions, in addition to others:

Patient access from the left side

Right-side C-arm positioning	30° relative to the longitudinal axis of the patient and double oblique projections of 58°/65° LAO/RAO and + 45°/- 45° CRAN/CAUD
OR position (Stand left, table rotated)	orthogonal to the longitudinal axis of the patient and double oblique projections of 50°/45° LAO/RAO and + 43°/- 45° CRAN/CAUD
Stand rotation	manual from + 60° to – 220°
Orthogonal system control oriented to the longitudinal axis of the patient	

Automap*

Automatic stand positioning depending on the reference image selected

Automatic reference image selection depending on the current stand positioning

Floor-mounted system for surgical angiography

Patient tables

Depending on the diagnostic and therapeutic focus, the various patient table configurations enable user-specific application

Standard table⁺

Floor-mounted patient table for all angiographic examinations and interventions

Large unobstructed cantilevered tabletop and wide range of rotation enables access to patient from all sides and easy transfer and positioning

Telescoping column with motorized height adjustment

Table control module for operation of all table functions

Table height	77.5 cm to 110 cm (30.5" to 43.3")
Table length	281.5 cm (110.8")
Lift speed	4 cm/s (1.58"/s)
Table rotation	± 120° with 5° increments
Manual longitudinal travel	125 cm (49.2")
Manual transverse travel	± 17.5 cm (6.9")
Maximum unobstructed overhang	224 cm (88.19")
Maximum table load	390 kg [859.8 lbs.] (250 kg [551.2 lbs.] patient weight with wide tabletop) (100 kg [220.5 lbs.] emergency resuscitation) (40 kg [88.2 lbs.] accessories)

Table with stepping (PERISTEPPING)⁺

Similar to the standard table, but with additional motorized longitudinal travel and PERISTEPPING.

Speed of table movement	180 mm in 1.3 s
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Table with tilt⁺

Similar to standard table, with head-down/head-up tilt options and servo operation, including PERISTEPPING

Tilt angle head down/head up	± 15°
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Tilt speed head down/head up	4.0°/s
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Servo-supported table control module for operation of all table functions including motorized longitudinal table movement in tilt position with power-dependent control

Maximum table load	340 kg [749.6 lbs.] (200 kg [440.9 lbs.] patient weight) (100 kg [220.5 lbs.] emergency CPR) (40 kg [88.2 lbs.] accessories)
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OR version table⁺

Similar to standard table, with head-down/head-up and lateral tilt options, including PERISTEPPING

Tilt angle lateral	± 15°
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Tilt speed lateral	2.5°/s
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Maximum table load	340 kg [749.6 lbs.] (200 kg [440.9 lbs.] patient weight) (100 kg [220.5 lbs.] emergency CPR) (40 kg [88.2 lbs.] accessories)
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⁺ Modular choice (several variations to choose from)

Floor-mounted system for surgical angiography

Tabletops

Three carbon-fiber tabletops with special contoured foam mattresses are available:

Wide tabletop/mattress⁺

Wide, straight shape for universal applications. The tabletop is straight up to the head area and offers maximum positioning comfort even for obese patients. An optional head support can be ordered for neurological applications.

Tabletop length	228.6 cm (90")
Tabletop width	52.5 cm (20.67")
Max. patient weight	200 kg (441 lbs.) at tilt and OR table 250 kg (551 lbs.) for standard imaging and PERISTEPPING
Al equivalent	≤ 1.2 mm (0.047") at 100 kV, HVL 3.7 mm (0.15") Al (according to CFR)
Mattress thin	< 0.6 mm (0.02") Al (= Standard)
Mattress thick	< 1.0 mm (0.04") Al (= Option)

Narrow tabletop/mattress⁺

Narrow form with recess at head end, e.g., for cardiological applications. The tabletop is tapered in the thorax region for the greatest possible freedom of C-arm angulation.

Tabletop length	228.6 cm (90")
Tabletop width	45.0 cm (17.72")
Max. patient weight	200 kg (441 lbs.)
Al equivalent	≤ 1.4 mm (0.06") at 100 kV, HVL 3.7 mm (0.15") Al (according to CFR)
Mattress thin	< 0.6 mm (0.02") Al (= Standard)
Mattress thick	< 1.0 mm (0.04") Al (= Option)

Long tabletop/mattress⁺

Longer design with a wide, straight form for special angiographic applications, e.g., angio OR. The tabletop is straight and lengthened to increase accessibility with maximum positioning comfort.

Tabletop length	263.7 cm (103.8")
Tabletop width	52.5 cm (20.67")
Max. patient weight	160 kg (352.7 lbs.)
Al equivalent	≤ 1.5 mm (0.06") at 100 kV, HVL 3.7 mm (0.15") Al (according to CFR)
Mattress thin	< 0.6 mm (0.02") Al (= Standard)
Mattress thick	< 1.0 mm (0.04") Al (= Option)

⁺ Modular choice (several variations to choose from)

Artis zee

Floor-mounted system for surgical angiography

Imaging system

High-resolution digital imaging system with outstanding image quality due to real-time post-processing

- Advanced noise reduction algorithm
- Optimized X-ray parameters
- Automated contrast and brightness adjustment
- Reliable details with digital acquisition zoom (DAZ)
- DDO (Dynamic Density Optimization) for real-time harmonization of fluoroscopy, native series and single images
- Real-time adaptive edge enhancement (zoom and gradient dependent), positive/negative image display, windowing, contrast/brightness, electronic shuttering, image shift (roaming), vertical and horizontal image reversal, zoom function

Up to 128 acquisition programs per each mode for flexible adjustment of the X-ray and image processing parameters to the different procedures (selectable in the examination room and in the control room)

Stores fluoroscopy images, incl. during fluoroscopy

Quantification:

Angle/length measurement with automatic calibration

Text functions:

Preconfigured image labeling using text modules or free annotation, comment line for image, patient positioning annotation

Fast, direct access to all series, single images and reference images, store monitor images, in both the examination room and the control room

Possible display of CT/MR images (512² or 1 k matrix) as static reference image

DICOM network connection and syngo user interface

Ready Processed Images

Configurable mode to store and archive overlays and post-processing data in the image

Image storage capacity

25,000 images in 1k/12-bit matrix

50,000 images in 1k/12-bit matrix*

100,000 images in 1k/12-bit matrix*

Floor-mounted system for surgical angiography

Operating modes

Fluoroscopy

Digital pulsed fluoroscopy, with 10, 15, 30 P/s in 1k/12-bit matrix and digital real-time filtering for advanced noise reduction with motion detector

Additional fluoroscopy pulse rates from 0.5 to 7.5 p/s* (CAREVISION)

Roadmapping (requires DSA option) with automatic pixel shift

Overlay fade, online superimposing of active fluoro and reference image

Storage of fluoroscopy images, incl. during fluoroscopy

Last Image Hold (LIH)

Fluoro Loop*

Storage and display of dynamic fluoro sequences

The maximum fluoro time that can be saved depends on the pulse frequency selected, e.g., 17 s at 30 p/s, 34 s at 15 p/s

Roadmap Plus*

Simultaneous display of subtracted and native fluoroscopy images

DR – 0.5 - 7.5 f/s*

Individual and serial images in original matrix size, full format and zoom 1 + 2 in 2k*, digital real-time filtering, individual image and series frame rates from 0.5 f/s to 7.5 f/s native, including time-controlled and manually variable frame rates

Acquisition, display and storage in original matrix size (up to 2k)*

DSA – 0.5 - 7.5 f/s*

Digital subtraction angiography in original matrix size, full format and zoom 1 + 2 in 2k*, digital real-time filtering, individual image and series frame rates from 0.5 f/s to 7.5 f/s, including time-controlled and manually variable frame rates

Acquisition, display and storage in original matrix size (up to 2k)*

Remask, peak opacification for iodine contrast (MaxOpac) and CO₂ contrast (MinOpac), display of anatomical background (Landmark) from 0 to 100%

High-speed acquisition for DSA, DR*

Increase of image frequencies for DSA and DR to 10/15/30 f/s

Storage in 1k matrix

Cardiac acquisition*

Acquisition at 7.5, 10, 15 and 30 f/s, acquisition, display and storage in 1k matrix, 12-bit

Cardiac acquisition includes IC Stent* software for enhanced stent visibility: operable at tableside, available in < 30 s

Pediatric option* with 60 f/s (only for 20 x 20 detector)

Floor-mounted system for surgical angiography

Operating modes

PERISTEPPING* (only with 30 x 40 flat detector)

Peripheral digital angiography stepping of the table with a single contrast medium injection performed while observing the contrast medium bolus

Position-dependent variable frame rates

Fully automatic exposure control

The collimator setting is automatically saved for each stepping increment

PERIVISION* (only with 30 x 40 flat detector)

Peripheral digital angiography with stepping and online subtraction display in one examination procedure with a single contrast medium injection while observing the contrast medium bolus

One automatically acquired mask image for each individual position

Position-dependent variable frame rates

Fully automatic exposure control

The collimator setting is automatically saved for each stepping increment

3D Acquisition* incl. DYNAVISON DSA/DR (30 x 40 flat detector)

Digital rotational angiography including 3D effect with dynamic, native subtracted image display and angle triggering. By reducing the frame rate, angle triggering enables a reduction in dose while simultaneously improving image quality.

Bolus time and angle resolution can be preselected in the exposure program

Rotation speed up to 45°/s

Selectable exposure frequency up to 30 f/s in 1k matrix, 60 f/s in 0.5 k matrix

Dynamic subtraction display with optimal alignment of mask and filling

Automatic pixel shift over the entire scene

Digital rotational angiography with angle triggering for acquisition of syngo InSpace 3D high-contrast imaging* and syngo DynaCT low-contrast imaging*

Overview of operating modes

DR, single image – 0.5-7.5 f/s*

DSA, single image – 0.5-7.5 f/s*

High-speed acquisition for DSA*, DR* up to 30 f/s*

Dynavision DR up to 60 f/s*

Dynavision DSA up to 60 f/s*

Card acquisition – FD 30 x 40 up to 30 f/s*; Pediatric* 60 f/s (20 x 20 flat detector)

Card subtraction – FD 30 x 40 up to 30 f/s*

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Additional functions

ECG recording and storage*

Recording, storage, and display of an ECG waveform

ECG waveform displayed on the display with synchron image information

ECG-triggered fluoroscopy and acquisition*

ECG-triggered fluoroscopy/acquisition provides a still image of the catheter even with moving objects. This enables the use of low pulse frequencies, resulting in a significantly lower dose compared to normal fluoroscopy/acquisition

Post-processing modes

Pixel shift

Manual pixel shift, automatic pixel shift, flexible pixel shift (rubber masking)

Changing window values

Zooming/Panning

Setting new mask

A new mask can be set with "Move Mask" or "Replace Mask"

Anatomical background

Anatomical surroundings visible by fading in the native image

Electronic shutter

To collimate an image electronically

Annotation

For inserting predefined or free text and drawing lines, arrows and circles

Distance and angle measurement

Floor-mounted system for surgical angiography

Quantification

QVA – Vascular analysis for vessel diameters of 3 mm – 42 mm* (not for coronary analysis)

Measurement program integrated into the imaging system for exact and reproducible vascular analysis

Automatic contour recognition

Stenosis quantification

Automatic and manual determination of reference diameter

Automatic and manual calibration methods

Diameter measurement

LVA – Left ventricular analysis*²

Scientific measurement program integrated in the imaging system for evaluating the functional efficiency of the left ventricle

Automatic and manual contour recognition

Calculation of the ejection fraction, volumes and indices (surface-length and Simpson methods)

Wall motion (centerline, radial and regional methods)

Automatic and manual calibration

Diameter measurement

QCA – Scientific coronary analysis for vessel diameters of 1.5 mm – 7 mm*

Scientific cardiological vascular analysis with stenosis quantification:

Scientific measurement program integrated into the imaging system for clinically validated, objective, exact and reproducible evaluation of coronary arteries

Automatic contour recognition

Stenosis measurement with geometrical and densitometric calculations

Automatic and manual determination of reference diameter

Automatic and manual calibration methods

Diameter measurement

QCA bifurcation*

Adds the option of quantifying bifurcations to scientific coronary analysis

IZ3D*

IZ3D is a reconstruction software for calculating 3D coronary models from at least two 2D projection images for cardiological vessel analysis with determination of stenosis level, distance measurement, and diameter calculation.

The IZ3D software application allows for interactive 3D reconstruction and visualization of coronary segments and is especially suited for supporting interventional cardiology, particularly in stenting procedures.

IZ3D is a software application that is completely integrated into the catheterization laboratory; no additional hardware is required.

Remark: Quantitative Coronary Analysis (QCA) is based on the gold standard in coronary analysis: CAAS II (Cardiovascular Angiography Analysis System Mark II) by Pie Medical, Netherlands. The CAAS II algorithms were developed at Erasmus University in Rotterdam. They have been clinically validated and are internationally recognized for scientific purposes (multi-center studies).

* Option; ² Only on cardiac acquisition scenes

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syngo DynaCT*

syngo X Workplace

For reconstruction of two-dimensional images acquired via Artis angiography systems into three-dimensional images or models

Protocols on acquisition system support standard imaging, the C-arm travels around the patient in an arc

Low-contrast display

Two-dimensional images acquired via native rotational angiography are used to obtain CT-like slices or CT-like images

Standard CT post-processing techniques are applied

High frame rates enable scans to be performed within approx. 5 – 20 seconds

High-contrast display

Two-dimensional images acquired via native or subtracted rotational angiography are used to reconstruct 2D slices. Bones, clips, coils and vessels filled with contrast medium are displayed via the InSpace Viewer for visualization in real time.

The high rotational speed of the C-arm results in a reduced bolus time of 5 seconds

InSpace Viewer for visualization of 3D volumes with default and configurable presets for a VRT display with color gradients or transparent views

Delivery volume

syngo X Workplace with 4 GB main memory

syngo InSpace 3D Flash includes syngo InSpace Viewer and 3D Volume Measurement

syngo 3D Basic

HW accelerator for fastest reconstruction

Optional

In-room controls and display

Further recommended syngo X Workplace applications:

- syngo InSpace 3D for Stenosis Measurement
- syngo DSA
- syngo Fly Through
- syngo iPilot
- syngo iGuide
- syngo IZ3D
- syngo DynaCT Cardiac
- syngo iFlow
- syngo 3D/3D Fusion

Networking

Ethernet interface, full-duplex, gigabit transfer rate

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DICOM Functions

DICOM Send

Sends images and series to DICOM networks or workstations

DICOM StC (Storage Commitment)

Receives archiving confirmation from the image archive

DICOM Print

Prints image material using virtual film sheets via DICOM print laser camera or network laser printer

DICOM Query/Retrieve

Searches for images and series in DICOM networks (Query)

Imports images and series from DICOM networks (Retrieve)

DICOM Get Worklist*

Imports patient and procedure data from a DICOM patient management system

DICOM MPPS* (Modality Performed Procedure Step)

Sends dose data as well as patient examination status to a patient data management system

Exam protocol can be sent as DICOM image

DICOM SR

Stores quantification results and relevant dose data as DICOM Structured Report and sends it to DICOM network

Archiving

DVD drive for automatic digital image storage (incl. DICOM viewer) on a DVD or CD-R for offline data exchange in DICOM format, such as JPEG, Bitmap or AVI

DVD recorder for archiving fluoroscopies and acquisitions on a DVD

USB interface to copy images on a memory stick or on an external hard disk

DICOM viewer on CD or DVD

Security Package

syngo Security Package*

SW option for Artis with expanded security features such as user management and audit trail function

Integration of the Siemens Recording System

AXIOM Sensis XP Interface*

Interface to AXIOM Sensis XP hemodynamic and electrophysiological recording system for automatic acquisition or transfer of patient demographic data and system parameters (dose report)

Viewing in the examination room

Multi-Modality Viewing*

View images from the syngo Multi-Modality Workplace (e.g., syngo InSpace 3D, CT, MR, Angio), Terason ultrasound on a separate display

Conversion to PAL/NTSC*

Live images (DVI format) can be converted to a low-res PAL/NTSC video norm (PAL/NTSC format)

Dual monitor configuration*

Connection of an additional image monitor for parallel display of two different reference images

* Option

Floor-mounted system for surgical angiography

CARE

CAREMATIC

Automatic X-ray control system for fully automatic calculation and optimization of exposure data based on fluoroscopic values

CAREFILTER

Five-level adaptive Cu prefiltration (CAREFILTER) for reduction of skin dose; automatically guided selection depending on absorption

Filter levels	0.1, 0.2, 0.3, 0.6, 0.9 mm Cu
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CAREVISION*

Pulsed fluoroscopy with additional reduced pulse frequencies of 0.5, 1.0, 2.0, 3.0, 4.0, 6.0**, 7.5 p/s

Pulse frequency can be adapted to the requirements of each application for significant reduction of radiation exposure, particularly during interventions

CAREPROFILE*

Radiation-free positioning of primary and semi-transparent collimators via graphic display in the LIH image on the image display

CAREPOSITION*

With CAREPOSITION it is possible for the first time to perform visually controlled object positioning without radiation

Radiation-free object positioning via graphic display of the central beam and image edges in the LIH image on the image display

When the table is moved, the current positions of the central beam and image edges are superimposed on the LIH image as orientation points

CAREWATCH

A measurement chamber (DIAMENTOR) is integrated into the collimator housing for acquisition of dose area product or skin dose

Displayed on the data display and image system display

Different displays can be configured for fluoroscopy and for fluoro pause:

During fluoro:	skin dose
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During fluoro pause:	accumulated skin dose or dose area product or percentage of a configurable dose limit value (total of fluoroscopy and acquisition)
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Artis zee

Floor-mounted system for surgical angiography

Operation

In the examination room

Complete system operation via modular control elements at the patient table for controlling C-arm movement, patient table and collimators.

Touchscreen operation with multi-functional joystick for operating the imaging system including post-processing and quantification as well as selecting organ programs

Ergonomically designed footswitch for releasing fluoroscopy, acquisition, and table brake, as well as an additional configurable function.

Wireless footswitch*

Wireless connection¹

Without the footswitch cable, it reduces the danger of collisions on the floor and permits easy positioning of the footswitch

Voice Control*

Voice Control¹ allows functions to be called, providing ergonomic procedures

Hands-free operation allows better focus on the patient and promotes sterile operations

The voice commands are displayed on the multi-modality display (if available) or on the reference image display as a menu:

- Selected image processing commands
- Selection of the exposure zoom levels
- Selection of the stored system positions
- Roadmap control
- Resetting of the fluoro timer (5 min.)

In the control room

Siemens Healthcare universal *syngo* interface using keyboard and mouse for complete system functions such as post-processing, archiving, and configuring fluoro and acquisition programs

Additional operating options in the control room*

The entire system can also be operated from the control room using the same functions as in the examination room:

- Touchscreen control* with multi-functional joystick
- Control modules* for C-arm, table and collimator
- Multi-functional hand switch* for acquisition control, switching acquisition frame rates and/or step movements (option for PERISTEPPING and/or PERIVISION)
- Footswitch*

¹ Not available in all countries

* Option

Floor-mounted system for surgical angiography

Flat detector 20 x 20⁺

Solid-state amorphous silicon flat detector with a 25 cm diagonal entrance plane

High-resolution 1k matrix with 184 µm pixel size and 14-bit digitization depth

High-speed fiber optic connection to the digital imaging system

Integrated temperature stabilizer

Integrated collision protection with removable grid

Input fields (diagonal)	25 cm, 20 cm, 16 cm and 10 cm (Overview, Zoom 1, 2, 3) 9.8", 7.9", 6.3" and 3.9" (Overview, Zoom 1, 2, 3)
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Material	aSi with CsI scintillator
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Image cover	< 1.5 mm carbon fiber
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Pixel size	184 µm
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Detector spatial resolution	2.7 LP/mm (Nyquist frequency)
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Maximum acquisition speed	up to 30 f/s (optionally up to 60 f/s)
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Output digital video matrix	1024 x 1024, 14-bit
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Detector quantum efficiency (DQE)	75%
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Modulation depth at 1.0 LP/mm	60%
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Modulation depth at the Nyquist frequency	20%
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Weight	< 10kg (22 lbs.9)
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Flat detector 30 x 40⁺

Amorphous silicon flat detector with a 48 cm diagonal entrance plane

High-resolution 2k** matrix (1920 x 2480) with 154 µm pixel size and 14-bit digitization depth

High-speed fiber optic connection to the digital imaging system

Integrated temperature stabilizer

Integrated collision protection with removable grid

Detector rotation	landscape/portrait selection with vertical display
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Input fields	48, 42, 32, 22, 16, 11 cm (18.9", 16.5", 12.6", 8.7", 6.3", 4.3")
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Material	aSi with CsI scintillator
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Image cover	< 1.5 mm carbon fiber
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Pixel size	154 µm
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Maximum acquisition speed	up to 60 f/s
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Matrix	up to 1920 x 2480
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Digitization depth	14 bit
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Spatial resolution of detector	3.25 LP/mm
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Detector quantum efficiency (DQE)	≥ 73% (at 0 Lp/mm)
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Modulation depth	≥ 60% (at 1.0 Lp/mm)
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Modulation depth at the Nyquist frequency (3.25 LP/mm)	10%
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Weight	20 kg (44lbs.)
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** 2k matrix possible only with DR/DSA/PERIVISION or DYNAVISION mode up to 7.5 f/s (FD 30 x 40)

Floor-mounted system for surgical angiography

Laser crosshairs*

Laser crosshairs for FD 30 x 40, integrated into the flat detector housing with tableside operation for simpler and quicker patient positioning

Class II laser, wavelength 600 – 700 nm (red), < 1 m W output power

Rotatable collimator for 20 x 20 detector

Compact collimator for cardioangiography with rectangular blade and wedge-shaped finger filter

Automatic synchronous rotation of the detector and collimator unit to compensate for image rotation at different examination positions of the support stand; rotation also possible via remote control

Rotatable collimator for 30 x 40 detector

Angio collimator with rectangular blade, wedge-shaped finger filters for DSA and cardiological applications and graduated finger filter

Independent rotation and shift of filter blades

Automatic synchronous rotation of the detector and collimator unit to compensate for image rotation at different examination positions of the support stand; rotation also possible via remote control

X-ray generator

Microprocessor-controlled high-frequency X-ray generator with automatic dose rate control for fluoroscopy and acquisition

100 kW at 100 kV (DIN 6822)

Nominal power Depends on X-ray tube and focus. See details in pertaining chapter.

SID tracking (automatic tube current adjustment to focus-detector distance)

CAREMATIC automatic X-ray control system for fully automatic calculation and optimization of exposure data based on fluoroscopic values

Patient transparency monitoring

Monitoring of tube load with data display

kV and mA post-display on image display

Generator control is fully integrated in the system control

Exposure time range 0.5 to 500 ms

Max. continuous power in fluoro mode 3000 W

Floor-mounted system for surgical angiography

X-ray tube

MEGALIX Cat 125/35/80-121GW (for the 20 x 20 detector)

High-performance X-ray tube with metal center tube using liquid bearing technology with constant noiseless anode rotation

Max. exposure voltage (IEC 60613)	125 kV	
Focal spot (IEC 60613)	0.4	0.8
Nominal power (IEC 60613) (thermal anode reference power = 300 W)	35 kW	80 kW
Nominal power (thermal anode reference power = 0 W)	42 kW	112 kW
Anode angle	8°	
Anode heat storage capacity	1,400,000 J (2,000,000 HU)	
Continuous heat dissipation of the tube assembly	max. 2900 W	
Anode rotation	150/180 Hz (3-phase current)	
Output	10 min	4000 W
	20 min	3000 W
	>30 min	2500 W
Total filtration (IEC 60601-1-3)	≥ 2.5 mm Al	
Leakage radiation (IEC 60601-1-3) (at 125 kV in 1 m distance)	< 0.35 m Gy/h (2000 W)	
Weight	36 kg (79.4 lbs.)	

MEGALIX Cat 125/15/40/80-122GW (for the 30 x 40 detector)

High-performance X-ray tube with metal center tube using liquid bearing technology with constant noiseless anode rotation

Max. exposure voltage (IEC 60613)	125 kV		
Focal spot (IEC 60613)	0.3	0.6	1.0
Nominal power (IEC 60613) (thermal anode reference power = 300 W)	15 kW	40 kW	80 kW
Nominal power (thermal anode reference power = 0 W)	18 kW	52 kW	100 kW
Anode angle	12°		
Anode heat storage capacity	1,400,000 J (2,000,000 HU)		
Continuous heat dissipation of the tube assembly	max. 2900 W		
Anode rotation	150 Hz (3-phase current)		
Output	10 min	4000 W	
	20 min	3000 W	
	> 30 min	2500 W	
Total filtration (IEC 60601-1-3)	≥ 2.5 mm Al		
Leakage radiation (IEC 60601-1-3) (at 125 kV in 1 m distance)	< 0.35 mGy/h (2000 W)		
Weight	approx. 36 kg (79.4 lbs.)		

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Floor-mounted system for surgical angiography

X-ray tube

MEGALIX Cat Plus 125/40/90-122GW (for the 20 x 20 detector)**

High-performance X-ray tube with metal center tube using liquid bearing technology with constant noiseless anode rotation

Max. exposure voltage (IEC 60613)	125 kV	
Focal spot (IEC 60613)	0.4	0.8
Nominal power (IEC 60613) (thermal anode reference power = 300 W)	35 kW	90 kW
Nominal power (thermal anode reference power = 0 W)	42 kW	112 kW
Anode angle	8°	
Maximum anode heat content	2,500,000 J (3,375,000 HU)	
Heat content of the X-ray tube assembly	3,600,000 J (4,900,000 HU)	
Continuous heat dissipation of the tube assembly	max. 2900 W	
Anode rotation	150/180 Hz (3-phase current)	
Output	10 min 4000 W 20 min 3000 W >30 min 2500 W	
Total filtration (IEC 60601-1-3)	≥ 2.5 mm Al	
Leakage radiation (IEC 60601-1-3) (at 125 kV in 1 m distance)	< 0.44 m Gy/h (2500 W)	
Weight	36 kg (79.4 lbs.)	

** Future availability

Floor-mounted system for surgical angiography

X-ray tube

MEGALIX Cat Plus 125/20/40/80-122GW (for the 30 x 40 detector)**

High-performance X-ray tube with metal center tube using liquid bearing technology with constant noiseless anode rotation

Max. exposure voltage (IEC 60613)	125 kV		
Focal spot (IEC 60613)	0.3	0.6 x 0.6 ²	1.0
Nominal power (IEC 60613) (thermal anode reference power = 300 W)	17 kW	38 kW	80 kW
Nominal power (thermal anode reference power = 0 W)	19 kW	42 kW	93 kW
Anode angle	12°		
Maximum anode heat content	2,500,000 J (3,375,000 HU)		
Heat content of the X-ray tube assembly	3,600,000 J (4,900,000 HU)		
Continuous heat dissipation of the tube assembly	max. 2900 W		
Anode rotation	150 Hz (3-phase current)		
Output	10 min 4000 W 20 min 3000 W > 30 min 2500 W		
Maximum cooling capacity of the anode	400,000 J/min. (540,000 HU/min.)		
Total filtration (IEC 60601-1-3)	≥ 2.5 mm Al		
Leakage radiation (IEC 60601-1-3)	< 0.44 mGy/h (at 125 kV in 1 m distance: 2500 W)		
Weight	approx. 36 kg (79.4 lbs.)		

Display Ceiling Suspension – DCS⁺

Ceiling-mounted suspension system for 2 to 8 displays enables height adjustment, longitudinal travel, tilt and swivel capabilities.

Length of longitudinal rails	425 cm (167.32")
Travel range of ceiling-mounted carriage	< 315 cm (124")
Vertical lift (height adjustment)	75 cm (29.5")
Length of cantilever	120 cm (47.24")
Rotation range of the ceiling-mounted support to the rail axis	300°, settings every 30°
Rotation range of displays	330°, settings every 30°
2 nd DCS ⁺ with 2 to 3 displays ⁺	

Integrated Data Display

All examination-relevant data of the system and table geometric data, system messages, and dose data with the CAREWATCH option are displayed on the reference display of the imaging system

Floor-mounted system for surgical angiography

DCS-extended*

Ceiling-mounted suspension system DCS-extended for 3 to 8 displays enables height adjustment, longitudinal travel, tilt and swivel capabilities. Enhanced positioning range and flexibility by double pivot cantilever.

Length of longitudinal rails	425 cm (167.32")
Travel range of ceiling-mounted carriage	< 315 cm (124")
Vertical lift (height adjustment)	75 cm (29.5")
Length of double cantilever	60 cm and 120 cm (23.62" and 47.24")
Rotation range between cantilever extension and carriage	330°, settings every 30°
Rotation range between cantilever and cantilever extension	± 120°
Rotation range of displays	330°, settings every 30°

Display boom interface*

Universal interface for third-party display boom

Displays

19" Monochrome Flat Displays	DSB 1906-DC ⁺	DSB 1908-DC ⁺
19" TFT high-contrast black-and-white display for flicker-free, distortion-free live image and reference image display for X-ray diagnostics as well as interventional therapeutic procedures		
Light weight, high luminance and contrast values		
Ambient light sensor for optimum adaption to the room brightness		
Diagonal screen measurement	19" (48 cm)	
Image display	1280 x 1024	
Maximum brightness	1000 cd/m ²	
Typical brightness	400 cd/m ²	
Contrast ratio	600 : 1	
Horizontal viewing area	170°	
Power consumption	< 75 VA (W)	

19" Color Display DSC 1904-DC⁺

Suitable for color display in the control room with ambient light sensor; not to be used as live display in the examination room

Diagonal screen measurement	19" (48 cm)
Image display	1280 x 1024
Maximum brightness	280 cd/m ²
Typical brightness	137 cd/m ²
Contrast ratio	450 : 1
Horizontal viewing area	170°
Power consumption	< 75 VA (W)

* Option; ⁺ Modular choice (several variations to choose from)

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Floor-mounted system for surgical angiography

Artis zee Large Display*

DSC 5608-DC

56" viewing area enables a new dimension in medical imaging. Up to 21 different image sources can be shown on the same display, allowing high flexibility in arranging different screen layouts. Important images can be scaled to the desired size, less important information can be moved out of the focus.

Resolution	3840 x 2160
Display area (W x H)	1244 x 700 mm
Panel technology	Color, TFT, MVA
Viewing angle	176° H and V
Contrast ratio	1200 : 1; min. 900 : 1
Luminance	450 cd/m ² (131 fL); min. 400 cd/m ² (117 fL)
LUT	11 bit
Antireflection coating	Anti-glare
Dimensions without stand (W x H x D)	1317 x 774 x 144 mm
Weight without stand	49 kg

Display Controller

Input performance

Total number of inputs	Digital: 21 Analog: 6
Number of simultaneous visible inputs	21
Digital input performance	DVI-D single link; max. 1920 x 1200, 60 Hz
High speed analog input performance (3 ports)	Max. 1600 x 1200, 60 Hz
Standard analog input performance (3 ports)	Max. 1280 x 1024, 75 Hz
Connectivity	21 inputs can be combined: Digital: up to 21 (DVI-D) Analog: up to 6 (DVI-I and VGA)

Ambient conditions

Operating temperature	0°C to + 40°C (– 32°F to + 104°F)
Storage temperature	– 20°C to + 55°C (– 4°F to + 131°F)
Operating humidity	10% to 80%, relative, not condensing
Storage humidity	10% to 95%, relative
Barometric pressure	700 hPa to 1060 hPa

Power requirements

Input voltage	100 to 240 V AC, 50 to 60 Hz
Input current	5.0 to 2.5 A
Redundancy	2 independent power supplies, hot swap capable

Mechanical specifications

Mechanical adaption	19" rack design, 4 U high
Degree of protection	IP20
Dimensions (W x H x D)	482.6 x 177 x 470 mm
Weight	< 20 kg

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Floor-mounted system for surgical angiography

Injectors	
MEDRAD Avanta*	
Contrast medium syringe	150 ml
Contrast flow mode fixed	1 to 45 ml/s, increment 1 ml/s; variable 1-10 ml/s in 0.1 increments
Fixed rate flow for saline flushing	1.25 ml/s
Adjustable rise time	0.1 to 9.9 seconds, 0.1 s increments
Contrast syringe refill	user selectable 25 to 150 ml, increments of 25 ml, refill rate 2.75 ml/s
Automatic or manual refill	2.5 ml/s
Pressure range	20.5 to 82.7 bar
Syringe	150 ml
Feedback on actual injection parameters	
Mechanical construction	movable stand, removable injector head
Rack mount version	
Injector head on overhead tube support, swivel only or swivel/movable mount	
MEDRAD MARK V ProVis*	
Contrast medium syringe	150 ml
Flow rates for 150 ml syringes	0.3 – 10.0 ml/s, ml/min/hr in 0.1 ml/s increments 10 – 50 ml/s in 1 ml/s increments 0.3 – 10.0 ml/min/hr in 0.1 ml/min/hr increments 10 – 59 ml/min/hr in 1 ml/min/hr increments
Release delay for injection or radiation	0 to 99.9 s in 0.1 s increments
Pressure limit	6 to 82 bar, corresponds to 100 to 1200 psi
Cylinder	150 ml
Double head injector, feedback on actual injection parameters	
Mechanical construction	movable stand, removable injector head
Rack mount version	
Ceiling-mounted injector head, swivel only or swivel/movable mount	

Floor-mounted system for surgical angiography

Injectors

ANGIOMAT Illumena*

Contrast medium syringe	150 ml
Flow rates	0.1 ml/s to 9.9 ml/s in 0.1 ml/s increments 10 ml/s to 40 ml/s in 1.0 ml/s increments 0.1 ml/min to 9.9 ml/min in 0.1 ml/min increments 10 ml/min to 999 ml/min in 1.0 ml/min increments
Pressure limit	5.7 to 82.7 bar (75 to 1200 PSI)
Adjustable volume	Volume: 0.1 to volume in syringe in 0.1 ml increments up to 9.9 ml, 1.0 ml increments thereafter
Fill rate	0.2 to 25 ml/s
Feedback on actual injection parameters	
Mechanical construction	movable stand, removable injector head
Rack mount version	
Ceiling-mounted injector head, swivel only or swivel/movable mount	

MEDRAD Avidia Pedestal* (not for USA)

Contrast medium syringe	150 ml
Contrast flow mode fixed	0.1 to 50 ml/s
Variable syringe filling speed	1.0 to 20 ml/s
Pressure range	82 bar (1200 PSI)
Syringe	150 ml
Feedback on actual injection parameters	
Mechanical construction	movable stand, removable injector head
Rack mount version	
Injector head on overhead tube support, swivel only or swivel/movable mount	

MEDTRON Accutron HP-D*** (only for EU)

Contrast medium syringe	2 x 200 ml
Flow rates	0.1-30 ml/s in 0.1 increments
Adjustable rise time	0.1 to 10 seconds, 0.1 s increments
Pressure limit	83 bar, programmable in 5-83 bar in 1 bar increments
Cylinder	200 ml
Double head injector, feedback on actual injection parameters	
Mechanical construction	movable stand, removable injector head
Rack mount version	
Injector head on overhead tube support, swivel only or swivel/movable mount	

Floor-mounted system for surgical angiography

Remote Service*

Preparation for Siemens Remote Service (SRS):

Allowed hardware and software remote diagnosis

Allowed remote system configuration, e.g., adding a DICOM node

Early warning system to help ensure system operation (Guardian)

Emergency power supply*

Emergency power supply* for the imaging system

Bridging of the imaging system power supply (50/60 Hz) until line voltage is back. In case of power failures of more than 90 seconds the imaging system will be shut down automatically.

Nominal power 2 kVA

Emergency power supply* for all system, table movements and imaging system

Emergency power supply for uninterrupted power supply for all system and table movements, as well as imaging system and monitors for a period of at least 10 min. during a primary power failure.

Nominal power 15 kVA

Line voltage 400 V for 440 V or 480 V; an adaptation to 440/480 V is required.

Emergency power supply* for the entire system incl. emergency fluoro

Emergency power supply for the entire system incl. emergency fluoro for a period of at least 10 minutes during a primary power failure. Uninterrupted power supply for all system and table movements, as well as imaging system and monitors.

Approx. 65 seconds after switching on and restarting the generator, you will be able to work with continuous fluoroscopy in emergency operation mode.

Nominal power 40 kVA

Line voltage 400 V for 440 V or 480 V; an adaptation to 440/480 V is required.

Installation data

Line voltage connection, 3-phase λ / Δ

Generator

Nominal voltage¹
(3 ph $\pm 10\%$) 380, 400, 420, 440, 480 V at 50/60 Hz ± 1 Hz

Fuse internal 50 A, external depending on FI type

Power consumption 8 kVA for fluoro; 160 kVA for acquisition

System control cabinet

Nominal voltage¹
(3 ph $\pm 10\%$) 380, 400 and 440 V at 50/60 Hz ± 1 Hz;
480 V at 60 Hz ± 1 Hz

Fuse internal 35 A, external 50 A slow-blow fuse

Power consumption max. 8.5 kVA

¹ Max. allowable nominal voltage between phases (L1, L2, L3) and PE 300 V

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Floor-mounted system for surgical angiography

Power unit for generator A100

	UN / P	100 kW	80 kW
	380 V*	≤ 0.08 Ohm	≤ 0.10 Ohm
	400 V*	≤ 0.09 Ohm	≤ 0.11 Ohm
	420 V	≤ 0.09 Ohm	≤ 0.12 Ohm
	440 V	≤ 0.10 Ohm	≤ 0.14 Ohm
	480 V	≤ 0.12 Ohm	≤ 0.16 Ohm

* resistance values in Ohm at $U_N \pm 10\%$

Weights

Examination room	Stand	approx. 665 kg	(1466lbs.)
	Display ceiling suspension (DCS) (depending on configuration)	200 – 328 kg	(441 – 723 lbs.)
	Patient table (depending on table)	452 – 550 kg	(996 – 1213lbs.)
Control room	Imaging system and miscellaneous options	approx. 150 kg	(331 lbs.)
Electronics room	Generator	300 kg	(661 lbs.)
	Cooling system (X-ray tube)	42 kg	(93 lbs.)
	System control cabinet	270 kg	(595 lbs.)
	System control cabinet (only with OR table)	125 kg	(276 lbs.)
	Cable cabinet	120 kg	(265 lbs.)

Standard accessories

Arm holder (pair)

Arm rest

Infusion bottle holder

Set of body straps

Optional accessories

Please refer to separate catalog

Floor-mounted system for surgical angiography

Ambient conditions (operation)		
Examination and control room	Temperature range: Relative humidity:	+ 15°C to + 30°C (recommended temp. 22°C [72°F]) 20 – 75% below dew point
Imaging system	Temperature range: Relative humidity: Air flow: Noise level:	+ 10°C to + 35°C 20 – 75% below dew point 630 m³/h < 53 dB (A)
Generator	Temperature range: Relative humidity: Temperature gradient: Air flow: Noise level:	+ 10°C to + 35°C 20 – 75% below dew point max. 5°C/h 160 m³/h < 55 dB (A)
Cooling system (for MEGALIX tube)	Cooling air: Air flow: Noise level:	+ 5°C to + 30°C 1100 m³/h 55 dB (A) at 50 Hz; 59 dB (A) at 60 Hz
System control cabinet 1	Temperature range: Relative humidity: Temperature gradient: Air flow: Noise level:	+ 15°C to + 30°C 20 – 75% below dew point max. 5°C/h 500 m³/h 48 dB (A)
System control cabinet 2 (only for OR table)	Temperature range: Relative humidity: Temperature gradient: Air flow: Noise level:	+ 10°C to + 35°C 20 – 75% below dew point max. 5°C/h n/a n/a

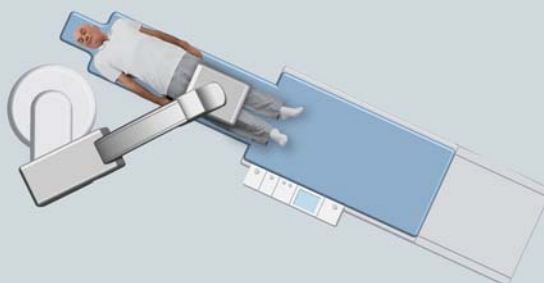
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Floor-mounted system for surgical angiography

System positions



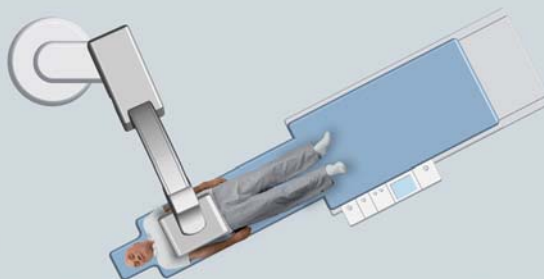
Head-end position



Right-side table rotated position*



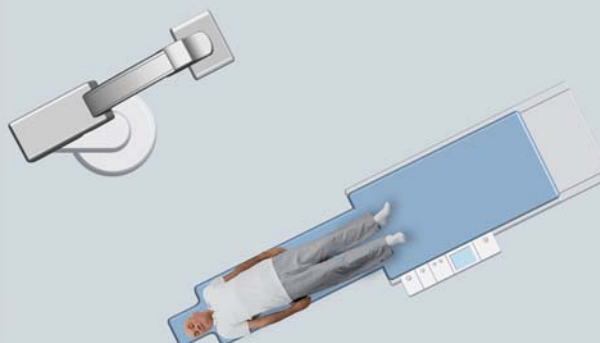
Left-side position



Left-side table rotated position*



Patient transfer position



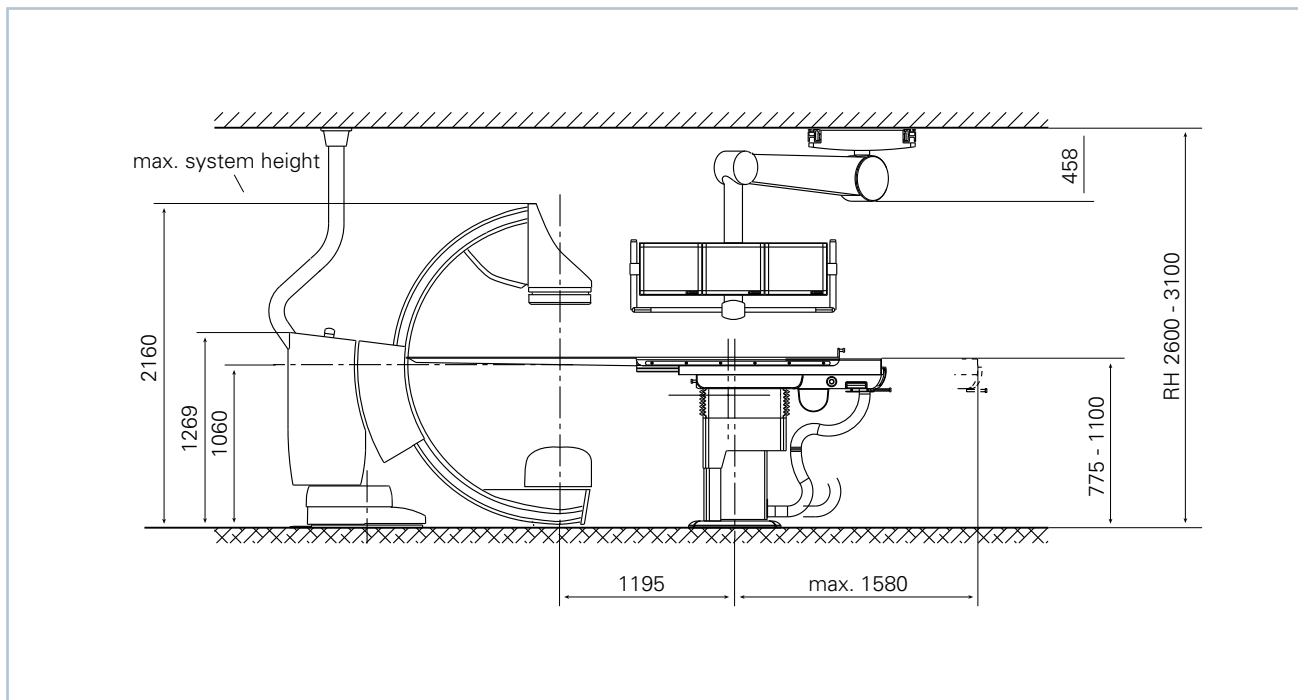
Park position*

* = MULTISPACE.F

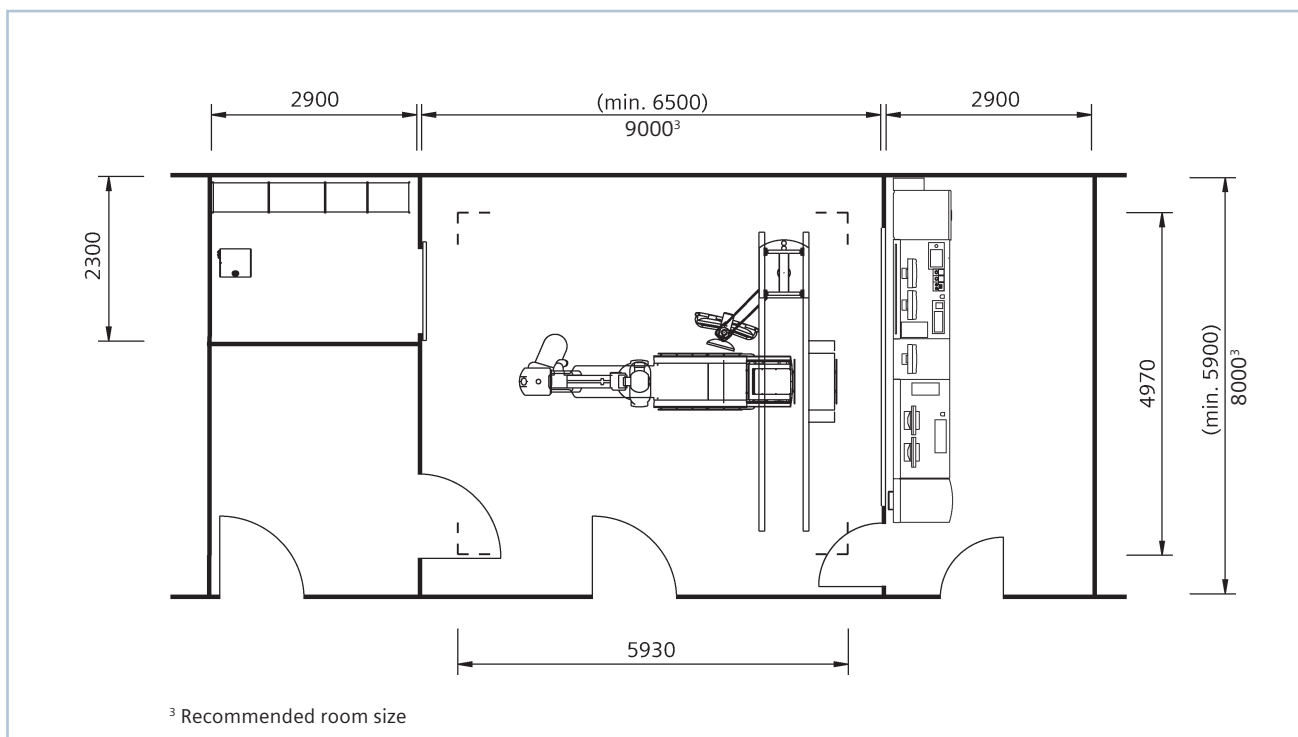
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Floor-mounted system for surgical angiography

System view (mm)



Room layout (mm)





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